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# The competition for the Woodwardian Chair of Geology: Cambridge, 1873

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**Abstract.** In 1873 the chair of geology at the University of Cambridge fell vacant following the death of Adam Sedgwick. Nine candidates stepped forward, hoping to fill the post. The correspondence generated in the ensuing battle illuminates two areas of particular interest. First, the strategies hidden behind bland lists of successive professors: candidates, peers and patrons manoeuvred to influence the outcome of the competition and competitors tried to reinforce their geological respectability by collecting testimonials from estimable geological acquaintances. Second, the Woodwardian competition inspired some outspoken opinions from British geologists about the relative worth of the candidates, which offer a fresh perspective on the process of professionalization in nineteenth-century science. The applicants came from various backgrounds, including gentlemanly amateurs, clerical geologists, Survey geologists and professors. Judging from the opinions of their peers, it seems that a non-professional or clerical status was rarely of primary concern in defining geological respectability at this time.

On 27 January 1873 notice was given that the Woodwardian Professorship of Geology at the University of Cambridge was once again vacant after more than half a century. Professor Adam Sedgwick (1785–1873), the previous incumbent, had died aged eighty-seven, and the election of his successor was to take place in the Senate House on 20 February at one o'clock in the afternoon.<sup>1</sup> Various geologists declared themselves as candidates for the vacant chair. They had twenty-five days in which to convince the electors of their suitability for the post.

Some revealing confidences were stimulated by this brief episode in the history of geology. This paper, which is based on some surviving correspondence, explores the conflict on two different scales. On one level, the letters generated over the course of the competition permit fine-grained analysis of the attempts made by the candidates to advertise themselves as suitable successors to Sedgwick. On a broader scale, this paper positions the Woodwardian competition within the wider context of late

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<sup>1</sup> Cambridge University Library Archives (hereafter CUL), (Cambridge University Registry (hereafter CUR), 39.17.2, 117, 2).

nineteenth-century British geology. The nine candidates came from a variety of backgrounds and exhibited a range of geological expertise. We see how the outcome of the competition was influenced by their efforts to muster support from prominent individuals, the tactics of canvassing within Cambridge colleges and the private opinions of their peers.

The 1873 competition for the Woodwardian Professorship provides an opportunity to add to the relatively small body of work on the institutional structures and perceptions of geology in the late Victorian period. This was a significant time in the history of the discipline when the well-known gentlemanly geologists of the previous generation were being replaced by new faces with different expectations. Roy Porter's 1982 article 'The Natural Sciences Tripos and the "Cambridge school of geology", 1850–1914' supplies a lucid account of these changes over more than half a century and also describes the influence of the 'Cambridge school of geology' upon the practice and orientation of British geology from the 1870s onwards.<sup>2</sup> The Woodwardian competition might seem a minor event, but these short episodes of dynamic social interaction can be extremely revealing, as Martin Rudwick has demonstrated in far greater detail than attempted here in *The Great Devonian Controversy*.<sup>3</sup> The battle for the Cambridge chair is similarly fortunate in the survival of letters, now scattered between a number of archives. A sizeable number of these have only recently been deposited in Cambridge University Library. They offer a snapshot of late nineteenth-century British geology at a stressful period, when positions in the geological hierarchy were reassessed, influential connections were forged and opinions were expressed in more explicit terms than usual.

The correspondence generated over the twenty-five days of the Woodwardian competition covers a spectrum of topics. Some letters presented general opinions about the relative merits of the candidates and the likely outcome of the competition; others confronted the immediacies of strategies and canvassing. This paper begins by outlining the history of the Woodwardian Chair and opportunities for geological employment at the time of the competition. After a brief introduction to the candidates, the discussion is divided into four sections. The first examines the background of three of the candidates on the Geological Survey and asks why Survey officers might be tempted to leave. The second section observes the emergence of the candidates and their hunt for testimonials. The University of Cambridge and its colleges provide a focus for the canvassing activities of the third section. The Cambridge colleges played a strong political role in the affair. They were more powerful in the nineteenth century than today and these small warring kingdoms often had scant regard for overarching university policy. The fourth section returns to the Geological Survey and their opinions

2 R. Porter, 'The Natural Sciences Tripos and the "Cambridge school of geology", 1850–1914', *History of Universities* (1982), 2, 193–216; see also J. G. O'Connor and A. J. Meadows, 'Specialization and professionalization in British geology', *Social Studies of Science* (1976), 6, 77–89.

3 M. J. S. Rudwick, *The Great Devonian Controversy: The Shaping of Scientific Knowledge among Gentlemanly Specialists*, Chicago, 1985; see also the detailed treatment of the competition for the Chair of the General History of Science at the *Collège de France* in 1903 by H. W. Paul, 'Scholarship and ideology: the Chair of the General History of Science at the Collège de France, 1892–1913', *Isis* (1976), 67, 376–97.

about the relative competence of the candidates. The paper concludes by assessing the results of the competition in the light of these influences and its place within the wider sphere of nineteenth-century geology in Britain.

### The Woodwardian Lectureship in context, c. 1873

Dr John Woodward (1665–1728), ‘Doctor of Physic and Professor of the same in Gresham College in London’, made provision in his will, dated 1 October 1727, for land to be purchased by his executors ‘of the yearly value of One hundred and Fifty Pounds’. This was to be used by the University of Cambridge, who would ‘advise and direct the summ [*sic*] of One hundred Pounds thereout to be paid yearly and every year to a Lecturer’. The Lecturer was to give four lectures each year on a branch of natural science and to look after John Woodward’s fossil collection and catalogues.<sup>4</sup> On Thursday 21 May 1818 Adam Sedgwick succeeded Professor John Hailstone as Woodwardian Lecturer. John Woodward’s ‘four valuable Cabinets of Fossils’ came under his care and he began to deliver regular courses of lectures.<sup>5</sup> Sedgwick ensured that this position could no longer be regarded as a sinecure and the Woodwardian position became a highly respected chair of geology.<sup>6</sup> Sedgwick imbued generations of Cambridge undergraduates with a love of geology. Earlier listeners attended largely out of interest, for the Natural Sciences Tripos was only set up halfway through his term of office.<sup>7</sup> The only other university position held in comparable regard during the early years of Sedgwick’s reign was the Readership in Geology at Oxford, created in 1819 and first held by the charismatic William Buckland (1784–1856).<sup>8</sup>

By the time of Sedgwick’s death the number of salaried positions and opportunities to receive training in geology had increased.<sup>9</sup> Though still a relatively new discipline, geology had become more organized as a profession and a recognizable career structure was starting to emerge. There was a growing awareness of the potential value of geology to the industrial and economic health of Great Britain, although the contributions of practical professionals (miners, mineral surveyors and civil engineers) were often marginalized by their gentlemanly peers.<sup>10</sup> Opportunities for young men to gain

4 CUL (CUR, 39.17.1, 1.1).

5 CUL (CUR, 39.17.1, 42).

6 Duke of Argyll, Obituary of Sedgwick, *Quarterly Journal of the Geological Society of London* (1873), 29, pp. xxx–xxxix; H. B. Woodward, *The History of the Geological Society of London*, London, 1907, 54; R. Porter, ‘Gentlemen and geology: the emergence of a scientific career, 1660–1920’, *The Historical Journal* (1978), 21, 809–36; H. W. Becher, ‘Voluntary science in nineteenth-century Cambridge University to the 1850s’, *BJHS* (1986), 19, 57–87.

7 T. G. Bonney, *A Septuagenarian’s Recollections of St. John’s*, reprinted from the *Eagle* (1909), 30 (149), 11; Porter, op. cit. (2), 201–2.

8 Col. Portlock, Obituary of William Buckland, *Quarterly Journal of the Geological Society of London* (1857), 13, pp. xxvi–xlv.

9 See O’Connor and Meadows, op. cit. (2); and Porter, op. cit. (2), 194.

10 On the complex connections between mining, the early development of geology and the economic and social stimuli involved see R. Porter, ‘The Industrial Revolution and the rise of the science of geology’, in *Changing Perspectives in the History of Science: Essays in Honour of Joseph Needham* (ed. M. Teich and R. Young), London, 1973, 320–43; and H. Torrens, *The Practice of British Geology 1750–1850*, Aldershot,

fieldwork experience on the Geological Survey of Great Britain were increasing. The Survey, discussed in greater detail below, had expanded enormously since its formation in 1835. Geology was also gaining respectability as a taught subject within academic institutions.<sup>11</sup>

The Cambridge and Oxford chairs in geology were soon joined by a number of others. King's College London was founded in 1828 and opened in 1832, boasting Charles Lyell (1797–1875) as its first Professor of Geology. Meanwhile, John Phillips (1800–74) was offering the first systematic series of geological lectures at the rival University of London.<sup>12</sup> Phillips had gained his early training in field geology whilst assisting his uncle, William Smith, in the practical work of a canal engineer and mineral surveyor. Before moving into the academic sphere, he had also been encouraged by the Rev. Benjamin Richardson, a clerical geologist with a large private library – a reminder of the variety of approaches to geology at this time. Phillips moved across to King's when Lyell retired after only two courses of lectures.<sup>13</sup> The University of London gained its own chair of geology in 1841, by which time it was known as University College. Thomas Webster (1773–1844) won the first competition for this chair, assisted by his lecturing experience and the weighty testimonials of William Buckland and Leonard Horner.<sup>14</sup> Andrew Crombie Ramsay (1814–91) occupied the University College chair a little later, from 1848 until 1851. He left to become Professor of Geology at the newly opened Royal School of Mines, which had been established as part of the Geological Survey.<sup>15</sup> Owen's College, in Manchester, opened in the same year. In 1871 the Murchison Chair of Geology and Mineralogy at the University of Edinburgh was added to a growing list of university positions, with Archibald Geikie (1835–1924), Survey Director for Scotland, as the first occupant. In addition to this catalogue of geological chairs, scientists were hoping to benefit from recent efforts by a Liberal government to reform the educational system following the appointment of the Devonshire Commission in 1870.<sup>16</sup>

Mention must also be made of the non-salaried geologists who comprised another important and valued part of the geological community. Despite the changes that were

2002. Torrens describes a less direct connection between the rise of geology and the Industrial Revolution, and a more antagonistic relationship between practical and academic or gentlemanly geologists.

11 On the links between academic and industrial geology see G. Tweedale, 'Geology and industrial consultancy: Sir William Boyd Dawkins (1837–1929) and the Kent Coalfield', *BJHS* (1991), 24, 435–51.

12 J. M. Edmonds, 'The first geological lecture course at the University of London, 1831', *Annals of Science* (1975), 32, 257–75.

13 J. M. Edmonds, 'The first "apprenticed" geologist', *Wiltshire Archaeological and Natural History Magazine* (1982), 76, 141–54. J. Evans, Obituary of John Phillips, *Quarterly Journal of the Geological Society of London* (1875), 31, pp. xxxvii–xlv; M. J. S. Rudwick, 'Charles Lyell, F.R.S. (1797–1875) and his London lectures on geology, 1832–33', *Notes and Records of the Royal Society of London* (1975), 29, 231–63.

14 Woodward, op. cit. (6), 88; J. Challinor, 'Some correspondence of Thomas Webster, geologist (1773–1844). VI', *Annals of Science* (1964), 20, 143–64.

15 H. Woodward, 'Eminent living geologists. (No. 5.) Sir Andrew C. Ramsay, LL.D., F.R.S., V.P.G.S., etc., etc.', *Geological Magazine* (1882), Decade II, IX, 289–93. For the reaction of practical miners to the opening of the School of Mines and to similar educational efforts see Torrens, op. cit. (10), I, 19–21.

16 R. M. MacLeod, 'The support of Victorian science: the endowment of research movement in Great Britain, 1868–1900', *Minerva* (1971), 9, 196–230; F. Turner, 'Public science in Britain, 1880–1919', *Isis* (1980), 71, 589–608.

taking place and the education reforms of the 1870s, paid practitioners of scientific research did not necessarily perceive themselves as a coherent 'professional' group, distinct from or superior to their unpaid gentlemanly colleagues. Morris Berman has cautioned against drawing a simplistic professional/amateur dichotomy in British science at this period.<sup>17</sup> The connections and overlaps between the professional, the amateur and the gentleman were elaborate. A 'professional' might be defined by training or by employment (usually academic or institutional rather than practical), but the social or financial position of the same individual might also give them 'gentlemanly' status. These boundaries were still hazy. On the one hand, Frank Turner has observed that with the move towards academic and institutional professionalization by young lay scientists such as Huxley, clerical scientists began to be marginalized by the scientific community from the 1840s onwards and their opinions, biased by theological concerns, were taken less seriously. Ruth Barton, on the other hand, has posited a less antagonistic relationship between professionalizers and gentlemanly non-professionals.<sup>18</sup> At the time of the Woodwardian competition, few geologists seemed to consider clerical or non-professional status relevant to the geological ability of the candidates. Geology had not lost its reputation as a gentlemanly pursuit amongst paid as well as unpaid geologists and patronage could still ease the path to geological employment.

### The candidates

Nine geologists declared themselves competitors for the Woodwardian Chair. Not all would stay in the field to the end of the competition, and ultimately only four would receive any votes from the electors. In January 1873 they might have been described as follows:

*Thomas McKenny Hughes* (1832–1917) of the Geological Survey, currently surveying tracts of land in north-west England. Hughes had taken his undergraduate degree in the 1850s at Trinity College, Cambridge (Sedgwick's old college). During this time he had become enthused by Sedgwick's geological lectures.<sup>19</sup> His geological interests ranged from Palaeozoic stratigraphy to Pleistocene drift.

*The Rev. Thomas George Bonney* (1833–1923), a popular Fellow and Tutor of St John's College, Cambridge. Like Trinity, this was a large and influential college, and Bonney had lectured on geology at John's for the past four years. A contemporary of Hughes as an undergraduate at John's, Bonney had also attended Sedgwick's lectures, though infrequently, for in those days 'there was no money

17 M. Berman, "'Hegemony" and the amateur tradition in British science', *Journal of Social History* (1975), 8, 30–50.

18 F. Turner, 'The Victorian conflict between science and religion: a professional dimension', *Isis* (1978), 69, 356–76; R. Barton, "'Huxley, Lubbock, and half a dozen others": professionals and gentlemen in the formation of the X Club, 1851–1864', *Isis* (1998), 89, 410–44.

19 H. Woodward, 'Eminent living geologists: Thomas McKenny Hughes', *Geological Magazine* (1906), Decade V, III, 1–13.

in Natural Science'. Bonney's geological interests included petrology, glacial action and Alpine geology.<sup>20</sup>

*Alexander Henry Green* (1832–96) of the Geological Survey and Lecturer in Geology at the School of Military Engineering at Chatham. Green had spent his undergraduate years at Gonville and Caius College, where, like Bonney, he had subsequently occupied a teaching Fellowship in geology (1856–60). Such positions had emerged from the restructuring of the new Natural Sciences Tripos.<sup>21</sup>

*William Boyd Dawkins* (1837–1929), previously of the Survey (1861–9), currently Director of the Museum and Lecturer in Geology at Owen's College (later Manchester University). Dawkins came under the influence of John Phillips at Oxford, graduating in 1860.<sup>22</sup> His work on Pleistocene mammalia had gained him Fellowship of the Royal Society in 1867.<sup>23</sup> By the time of the competition, Dawkins was also a consultant geologist and served on the Council of the Geological Society.<sup>24</sup>

*The Rev. Osmond Fisher* (1817–1914), formerly Fellow and Tutor of Jesus College, Cambridge. Fisher held a nearby college living and worked on mathematical aspects of geology. He was another who had listened to Sedgwick's lectures as a Cambridge undergraduate and now worked on theories of the structure of the Earth's crust, rock folding and the development of mountain ranges.<sup>25</sup> Fisher also had an interest in the Pleistocene drift.

*John Morris* (1810–86), Professor of Geology at University College London for the past eighteen years. Morris had assisted Sedgwick as Deputy Woodwardian Professor for the past two years. He won fame as a palaeontologist with the publication of *A Catalogue of British Fossils* in 1843 and was one of the vice-presidents of the Geological Society at the time of the election.<sup>26</sup>

*Peter Martin Duncan* (1824–91), Professor of Geology and Palaeontology at King's College London for the past four years and lately also Lecturer at the Indian College of Civil Engineering at Cooper's Hill.<sup>27</sup> Martin Duncan was known for his palaeontological work, particularly for his research on British fossil corals.

20 Bonney, op. cit. (7), 11; CUL (CUR, 39.17.2, 129); R. H. Rastall, 'Obituary. The Rev. Professor T. G. Bonney, Sc.D., F.R.S., etc.', *Geological Magazine* (1924), 61, 49–51.

21 CUL (CUR, 39.17.2, 126); Porter, op. cit. (2), 202.

22 R. H. Rastall, 'Obituary. Sir William Boyd Dawkins', *Geological Magazine* (1929), 66, 142; A. S. Woodward, 'Obituary notice of Sir W. Boyd Dawkins 1837–1929', *Proceedings of the Royal Society* (1931), 107, pp. xxiii–xxvi.

23 H. Woodward, 'Eminent living geologists: William Boyd Dawkins', *Geological Magazine* (1909), Decade IV, VI, 529–34.

24 For more on Dawkins's role in industrial consultancy see Tweedale, op. cit. (11).

25 C. Davison, 'Eminent living geologists: Rev. Osmond Fisher, M.A., F.G.S.', *Geological Magazine* (1900), Decade IV, VII, 49–54; H. Woodward, 'Obituary. Rev. Osmond Fisher, M.A., F.G.S.', *Geological Magazine* (1914), Decade VI, I, 383–84.

26 CUL (CUR, 39.17.2, 115, 128); H. Woodward, 'Eminent living geologists. (No. 3.) Professor John Morris, M.A. Cantab., F.G.S., etc.; President of the Geologists' Association', *Geological Magazine* (1878), Decade II, V, 481–7; J. Morris, *A Catalogue of British Fossils*, London, 1843.

27 Anon., 'The Woodwardian Professorship', *Pall Mall Gazette*, 11 February 1873, 7.

He was also a vice-president of the Geological Society and a Fellow of the Royal Society.<sup>28</sup>

*The Rev. Peter Bellinger Brodie* (1815–97), once of Emmanuel College, Cambridge, and a pioneer of fossil insect research. He had come under Sedgwick's spell at Cambridge, and dedicated his book *A History of the Fossil Insects in the Secondary Rocks of England* to Sedgwick, his 'friend and instructor'.<sup>29</sup> Brodie had moved between various church livings, studying the geology of each new area he came to, and had finally settled in Warwickshire.<sup>30</sup>

*William King* (1809–86), Professor of Mineralogy and Geology at the Queen's College, Galway since the foundation of the college in 1849. King's interests were broad: he was an authority on Permian palaeontology and worked on eozoa, and the Queen's College had recently awarded him their first honorary D.Sc.<sup>31</sup>

The candidates display some of the wide range of backgrounds which nurtured geologists in the late nineteenth century: universities, museums, the Survey and the church. They brought with them equally varied research interests. Some, like Bonney, were well known in Cambridge, where most of those who would vote for the new professor resided. Others would have to work much harder to become familiar to the electors. All would be judged on their geological experience and lecturing abilities, but personal reputation, canvassing tactics and the respectability of their supporters would also influence the outcome of the competition. It is interesting to see that many of those who now desired the Woodwardian Chair had originally been set on their geological paths by Sedgwick.

Before following the candidates into the field, we first consider the Geological Survey, the largest employer of geologists in Britain at this period. Two of these applicants were working at the Survey in January 1873, and their colleagues would follow the Woodwardian competition with interest. What was the atmosphere in the Survey around the time of the competition and why might Survey officers decide to leave?<sup>32</sup>

### Employment on the Geological Survey c. 1873

Roy Porter observed that many eminent geologists in the latter half of the nineteenth century had once held a Survey post.<sup>33</sup> Three of our candidates had Survey

28 J. W. Gregory, 'Obituary. Peter Martin Duncan, M.B. (Lond), F.R.S., F.G.S., F.L.S., etc.', *Geological Magazine* (1891), Decade III, VIII, 332–6; A. Geikie, Obituary of P. Martin Duncan, *Quarterly Journal of the Geological Society of London* (1892), 48, 47–8.

29 P. B. Brodie, *A History of the Fossil Insects in the Secondary Rocks of England*, London, 1845.

30 H. Woodward, 'Eminent living geologists: The Rev. P. B. Brodie, M.A., F.G.S.', *Geological Magazine* (1897), Decade IV, IV, 481–5.

31 Anon., Obituary of William King, *Nature* (1886), 34, 200–1; T. H. Pettigrew, 'William King (?1808–1886) – a biographical note', *Newsletter of the Geological Curators' Group* (1980), 3, 327–9; D. A. T. Harper, 'King, William (1809–1886)', *Oxford Dictionary of National Biography*, Oxford, 2004.

32 This subject is covered in detail in D. Oldroyd and G. McKenna, 'Conditions of employment and work practices in the early years of the Geological Survey of Great Britain', unpublished manuscript.

33 Porter, op. cit. (2), 196.



connections: T. McKenny Hughes and A. H. Green were Survey officers at the time of the competition; both had started as assistant geologists in 1861. William Boyd Dawkins, who was no longer in Survey employ, had joined the staff in 1862 at the same lowly rank.<sup>34</sup> By the early 1870s there were a number of reasons that might have led Survey staff to consider leaving. Loyalty to the Survey and camaraderie amongst officers engaged in the exhausting but rewarding labours of fieldwork were tempered by grievances about pay and promotion and other restrictions to freedom.

There had been a tremendous expansion and reorganization of Survey staff in 1867 when Sir Roderick Murchison was Director General of the Geological Survey. Both Hughes and Green were promoted to the rank of senior geologist in the aftermath.<sup>35</sup> At that time there was still a general expectation that assistant geologists would receive advancement after six years, depending on vacancies and the quality of their work.<sup>36</sup> However, the rate of promotion slowed considerably after the late 1860s, largely because of this staff increase, so Hughes and Green were amongst the last to have such expectations confirmed.<sup>37</sup>

The restructuring of 1867 also highlighted the autocratic tendencies of certain senior Survey staff. Henry Bristow (1817–89), one of the new ‘district surveyors’, confided to Archibald Geikie, Director of Scotland, that directors were disinclined to depute any of their power to district surveyors, ‘as if a Regiment could consist only of the commanding officer & rank & file’.<sup>38</sup> Under Murchison’s rule, some junior officers thought that their director general spent too much time maintaining his social position. Green complained to Hughes in 1868 that Murchison was ‘wholly taken up with African explorers and lions who will flatter his vanity and make him conspicuous in the fashionable world: but for a lot of vexatious interference now and then we should not know of his existence’.<sup>39</sup> There were also problems of pay. In 1872 Green grumbled that Survey officers received less than other branches of the Civil Service, such as the Treasury and Foreign Office.<sup>40</sup>

One final grievance concerned publication restrictions. These had caused one of the Woodwardian candidates particular irritation in the past. The information collected by Survey officers belonged to the government and was intended to appear in the official maps and memoirs of the Geological Survey. The rights of officers to read papers on these matters to learned societies had aroused occasional rumbles of debate over the

34 Minute relating to the appointment of William Boyd Dawkins to the Geological Survey, 19 May 1862, British Geological Survey Library Archives (hereafter BGS) (GSM1/8, 211).

35 Official submission of the new scheme of Survey promotion by Roderick Murchison, 26 March 1867, BGS (GSM1/8, 461).

36 Official correspondence by Roderick Murchison relating to promotions within the Survey, 15 March 1867, BGS (GSM1/8, 458).

37 See also J. S. Flett, *The First Hundred Years of the Geological Survey of Great Britain*, London, 1937, 75; E. Bailey, *Geological Survey of Great Britain*, London, 1952, 76; ‘Statement of the position of the Assistant Geologists on the Geological Survey’, March 1896, BGS (GSM2/172).

38 Henry Bristow to Archibald Geikie, 7 July 1867, Edinburgh University Library (Gen 1425/45).

39 Alexander Green to Thomas McKenny Hughes, 12 August 1868, Sedgwick Museum of Earth Sciences, University of Cambridge (hereafter SMC) (Hughes Papers).

40 Alexander Green to Thomas McKenny Hughes, 26 June 1872, SMC (Hughes Papers).

decades.<sup>41</sup> Controversy broke out again in 1867 when Murchison discovered that Hughes had published a paper on the geology of the Lake District in the *Geological Magazine*.<sup>42</sup>

Murchison was incensed that Hughes had mentioned neither his co-workers in the area nor the fact that this information had been collected in the course of a government survey. He fired off a memorandum, insisting that any unofficial publications should first be submitted to their director for authorization and should include appropriate acknowledgement of the Survey.<sup>43</sup> David Oldroyd has observed that Murchison's opposition to this paper was heightened by Hughes's evident favour for Sedgwick's side of the Cambrian–Silurian debate over Murchison's interpretation. He has also suggested that Hughes became more tardy in his Survey duties after this rift.<sup>44</sup> A. C. Ramsay, met above as Professor of the School of Mines, was Director of the Geological Survey of England and Wales at the time and eventually persuaded Murchison to let Hughes read the offending paper to the Geological Society. He urged Hughes to seize 'the occasion of facilitating the reading of good papers (more or less founded on Survey work) by Survey men on other occasions'.<sup>45</sup>

In view of all these problems, it is not surprising that Survey officers were alert for more attractive prospects. A year before the competition, Green had noted that 'many men look upon the Survey now only as a step to something better, Dawkins for instance'. He continued, 'They come for their own convenience to get a practical knowledge of geology and a position, but with a fair determination from the first not to stop, and, just when they get to be really valuable, they leave, and a new man has to be trained'.<sup>46</sup> Dawkins had left in 1869 to take up the position of Curator of the Owen's College Museum in Manchester.<sup>47</sup> By 1872 Dawkins was also Lecturer in Geology at Owen's College and Green himself was speculating 'whether I shall not try to get off soon'.<sup>48</sup> Green had held the Lectureship in Geology at the School of Military Engineering at Chatham since 1868, perhaps with a view to building up lecturing

41 Andrew Ramsay to W. Talbot Aveline, 17 December 1847, BGS (GSM1/420, A); Andrew Ramsay to Henry De La Beche, 13 November 1854, BGS (GSM1/420); J. A. Secord, 'The Geological Survey of Great Britain as a research school, 1839–1855', *History of Science* (1986), 24, 223–75; Oldroyd and McKenna, op. cit. (32).

42 T. M. Hughes, 'On the break between the Upper and Lower Silurian Rocks of the Lake District, as seen between Kirkby Lonsdale and Malham, near Settle', *Geological Magazine* (1867), 4, 346–56.

43 Roderick Murchison to Archibald Geikie, 11 August 1867, Library of the Geological Society of London (789/111); 'Memorandum made by the Director General after reading a Memoir by Mr T. McK. Hughes of the Geological Survey as published in the Geological Magazine of Aug. 1, 1867, p. 346', 19 August 1867, BGS (GSM1/8, 503).

44 D. R. Oldroyd, *Earth, Water, Ice and Fire: Two Hundred Years of Geological Research in the English Lake District*, London, 2002, 42–3, n. 4; Oldroyd and McKenna, op. cit. (32). See also J. A. Secord, *Controversy in Victorian Geology: The Cambrian–Silurian Dispute*, Princeton, 1986.

45 Andrew Ramsay to Thomas McKenna Hughes, 6 November 1867, CUL (Add MS 9557/2 C/65).

46 Green to Hughes, op. cit. (40).

47 Minute relating to the appointment of William Boyd Dawkins to the Geological Survey, op. cit. (34); Geological Survey Office to the Secretary of Science and Art relating to the resignation of William Boyd Dawkins, 4 June 1869, BGS (GSM1/9, 117); Woodward, op. cit. (22), p. xxiii.

48 Green to Hughes, op. cit. (40).

experience as well as to supplement his Survey pay.<sup>49</sup> In 1871 he mentioned to a colleague that he was thinking of trying for the Woodwardian deputy position, but nothing appears to have come of Green's plans. The post went to John Morris of University College London, who was to be a rival candidate for the Woodwardian Chair.<sup>50</sup>

In previous years A. C. Ramsay and Archibald Geikie had managed to combine their Survey employment with their university chairs.<sup>51</sup> This was now becoming more difficult. In Green's case at Chatham, Murchison had stipulated 'that the time occupied in these new duties should be taken out of his annual vacation as one of the Government Geological Surveyors'.<sup>52</sup> It is also possible that Hughes, like Green, might have considered applying for the deputy-Woodwardian Professorship, but for the conflict with Survey work. A letter from Sedgwick's niece, Margaret Isabella, hints at this: 'I do wish Mr Hughes had been appointed my Uncle's deputy for the Lectures if it would not have interfered with his present work, & if he would have taken it.'<sup>53</sup> The strategy employed by Dawkins – to leave once the requisite training to secure a position elsewhere had been acquired – was not uncommon.

So the Survey seems to have functioned partly, though perhaps not always willingly, as a training ground for university lecturers and museum curators. Although the atmosphere amongst the officers seemed to have lost none of the hearty bonhomie of earlier years, there were also cogent reasons to review future prospects and the Woodwardian Chair offered an attractive, secure and prestigious position. However, there were great differences between the respectable confines of a university lecture hall and the exuberant outdoor life of the field geologist.<sup>54</sup> It was only in retrospect that successful ex-Survey applicants became fully aware of the drawbacks to university employ in the late nineteenth century, where restrictions to research might have shed a rosier light on their years in the Survey.

This is not the last we shall hear of the Survey in connection with the Woodwardian competition. Survey staff held strong opinions about the qualities of a competent geologist, many occupied powerful social positions in the wider scientific world and they were not slow to share their views with those who might influence the votes of the Cambridge electors. But first we return to the end of January 1873 to see the scurry of applicants for the newly vacant chair of geology at Cambridge University and observe the strategies, support networks and perceptions which emerged over the next twenty-five days.

49 Official letter from Col. Gallwey concerning the employment of a geological lecturer at the Academy at Chatham, 14 October 1868, BGS (GSM1/9, 64–6).

50 Alexander Green to Trenham Reeks, 21 April 1871, BGS (GSM1/328).

51 Flett, *op. cit.* (37), 247; O'Connor and Meadows, *op. cit.* (2), 80; Porter, *op. cit.* (6), 831; *idem*, *op. cit.* (2), 196.

52 Official letter from Roderick Murchison concerning the duties of Alexander Green as a Lecturer at the Academy at Chatham, 26 October 1868, BGS (GSM1/9, 69).

53 Margaret Isabella Sedgwick to Mary Lyell, 22 March 1872, CUL (Add MS 9557/12 C/6, i).

54 See Porter, *op. cit.* (2), 195–8.

### The competition begins: candidates, electors and the hunt for testimonials

Adam Sedgwick died at half-past one in the morning on 27 January 1873. The news spread rapidly. A telegraph from Cambridge enabled the *Pall Mall Gazette*, the popular paper and review, to add this information to the evening news that day.<sup>55</sup> An official announcement of the vacancy was printed the following day and obituaries of Sedgwick appeared soon after in the *Saturday Review* and the *Athenaeum*.<sup>56</sup> Members of the university were also quick to warn possible successors that the field was open, and to urge an early start in the race.

The Master of Corpus Christi College, Cambridge, Edward Perowne (1826–1906), for example, learnt of Sedgwick's death in a council meeting. He immediately scribbled a note to his friend Joshua Hughes, Bishop of St Asaph and father of Thomas McKenny Hughes: 'I hasten to inform you, in case your son wishes to be a Candidate, he should at once confer with his College. In these cases it is most important to be *early* in the field'.<sup>57</sup> So swift was the response upon Sedgwick's death that Henry Bristow, now Senior Director of the Geological Survey, wrote to his friend (and one of the candidates), Osmond Fisher:

I do not know what is the usual way of proceeding in such cases; but it seems to me to savour of indecent haste & to show a want of proper feeling to take active measures to fill up a vacancy so soon after death – before the dead man has been carried to the grave: but I suppose it only amounts to a practical carrying out of the cry 'The King is dead! Long live the King'.<sup>58</sup>

Although an early start was considered advantageous, this placed Hughes, as a close personal friend of the deceased professor, in an awkward position. On 30 January one of Sedgwick's nieces, Margaret Isabella Sedgwick, wrote to reassure Hughes on this point and to warn him that Bonney and Fisher were already canvassing: 'I know how kind you are in not moving just now; but I sh<sup>d</sup>. like you to know that we hope you will not delay any steps you may like to take because of our feelings, as I need not tell you how rejoiced our family w<sup>d</sup>. be if you succeeded *him*'.<sup>59</sup> But though he began gathering testimonials, Hughes still declined to start canvassing until after the funeral.<sup>60</sup> Sedgwick was buried on 1 February. His pall bearers included two future candidates (as yet unannounced) – Hughes and Morris – and one man who would emerge as a supporter of Hughes's candidature, the Rev. Henry Richards Luard (1825–91), Registrary of the University of Cambridge (keeper of the University records), medieval historian and one-time Fellow of Trinity College.<sup>61</sup>

55 Anon., 'Evening news', *Pall Mall Gazette*, 27 January 1873, 8.

56 Anon., 'Cambridge', *Pall Mall Gazette*, 28 January 1873, 7; Anon., Obituary of Adam Sedgwick, *Saturday Review* (1873), 35 (901), 140–1; Anon., Obituary of Adam Sedgwick, *Athenaeum* (1873), 2362, 150–1.

57 Edward Perowne to Joshua Hughes, 27 January 1873, CUL (Add MS 9557/2 G/3). Original emphasis.

58 Henry Bristow to Osmond Fisher, 28 January 1873, CUL (Add MS 7652/V R/3).

59 Margaret Isabella Sedgwick to Thomas McKenny Hughes, 30 January 1873, CUL (Add MS 9557/1 S/9, i). Original emphasis.

60 Henry Bristow to Osmond Fisher, 31 January 1873, CUL (Add MS 7652/V R/5).

61 Anon., 'Summary of this morning's news', *Pall Mall Gazette*, 3 February 1873, 6.

### The candidates

On 3 February the *Pall Mall Gazette* announced that three men had declared themselves candidates for the Woodwardian Chair: Bonney, Dawkins and Fisher.<sup>62</sup> Hughes's supporters began to become concerned that his candidature was not more widely known. Luard wrote to another influential figure, Dr Clement Mansfield Ingleby (1823–86), metaphysicist and Shakespeare critic, informing him that Thomas McKenny Hughes was not yet in the field. Ingleby passed this letter on to William Whitaker (1836–1925), the Survey geologist, who scribbled, next to the critical passage, 'What the *Devil does this* mean Thomas? Why don't you show yourself like a man?'<sup>63</sup> On 7 February Hughes learned that Brodie was a candidate. The *Athenaeum* reported the next day that Bonney, Dawkins and Fisher had been joined by Martin Duncan, Green and Hughes.<sup>64</sup> Morris had entered the race by 11 February and King by 15 February.<sup>65</sup> With all the candidates now in the field, it is time to introduce the electors and those who might influence their opinion.

### The electors and eminent authorities

Only electors could vote in the competition, so they were the ultimate target for anyone who wanted to influence its outcome. Candidates could discover electors' names by reading the Electoral Roll of the University, and most were resident in Cambridge: 'Heads of Houses, Professors, University Examiners, and resident members of the Senate'.<sup>66</sup> Few would have known anything of geology. Their opinions would have been heavily influenced by university and college politics; however, a geologically respectable candidate was also required to retain the good name of the chair. The public eye might well have been focused closely on Cambridge at this time, for a Royal Commission had been appointed the previous year to investigate college finances at Oxford and Cambridge. This had stimulated arguments for reform – particularly of the sciences – amongst Cambridge and Oxford dons.<sup>67</sup>

The candidates would have known few of the electors personally. They were generally approached through intermediaries – eminent geologists or individuals of high standing in the university who might convince the electors of the quality and suitability of their protégés. These authorities might advocate the cause of a favoured candidate through conversation or letter, but the standard route was the testimonial – an official supporting letter written to a candidate and vouching for their experience and overall fitness for the post. Candidates raced to secure these statements of approbation. A select

62 Anon., 'Cambridge', *Pall Mall Gazette*, 3 February 1873, 9.

63 Henry Luard to Clement Ingleby, 4 February 1873, with annotation by William Whitaker, CUL (Add MS 9557/2 G/27). Original emphasis. For more on Whitaker and his work see W. H. George, 'William Whitaker (1836–1925) – geologist, bibliographer and a pioneer of British hydrogeology', in *200 Years of British Hydrogeology* (ed. J. D. Mather), Geological Society Special Publication 225, 2004, 51–65.

64 Mary Lyell to Thomas McKenny Hughes, 7 February 1873, CUL (Add MS 9557/2 G/35, i); Anon., 'Science gossip', *Athenaeum* (1873), 2363, 185.

65 Anon., op. cit. (27); Anon., 'Science gossip', *Athenaeum* (1873), 2364, 216.

66 Anon., 'University intelligence. Cambridge, Feb 20', *The Times*, 21 February 1873, 5.

67 See MacLeod, op. cit. (16), 207–8.

number would be reproduced and sent to the electors in a thin printed leaflet, prefaced with a statement of intention to stand for the chair, often accompanied by a short résumé of credentials (geological and lecturing experience, awards and publications).

### Testimonial-hunting and the emergence of support networks

During the early days of the competition a great deal of correspondence was provoked by this quest for testimonials which might raise a candidate's profile in Cambridge and emphasize their wider renown. Both aspects were important. Bonney, Fisher and Morris had the advantage of being relatively well known in Cambridge at the start of the competition. When Fisher requested a testimonial from George Downing Liveing, Professor of Chemistry and Fellow of St John's, Liveing advised, 'Of course I am willing to write you a testimonial if you wish it, but I really think it will not help you. It is the opinion of outsiders which you want to make known to the electors in that way.'<sup>68</sup> The most popular outsiders to be targeted, aside from previous employers, were respected elderly geologists who occupied socially powerful positions amongst their scientific peers. They included Henry Woodward, Joseph Prestwich, John Phillips, Charles Lyell and A. C. Ramsay.

Letters from candidates to employers, authorities and friends, both inside and outside Cambridge, often presented their recipients with a dilemma. The candidates did not all emerge at once, so those who received early requests for testimonials had to find out who else might be stepping forward before they could resolve where their allegiances lay. Only then could they decide whether to accede or decline, and how effusive to make their response. Although the content of testimonials was rather similar (a statement that the candidate was a competent geologist and a good lecturer), the decisions that were taken by beleaguered authorities on whether to supply or withhold their official support can be very informative.

Henry Woodward (1832–1921), editor of the *Geological Magazine* (which had published Hughes's controversial Survey paper in 1867), was placed in an awkward position when he received a letter from Fisher at the end of January. He wrote to Hughes, asking whether he was also going to apply and, if so, whether he wanted a testimonial:

my reason for asking this imperatively is that Fisher writes for a testimonial & I would *much prefer* not having to hurt his feelings by telling him 'I feared he was not strong enough for the place'; it would be less brutal on my part to say I had already spoken in your favour, which is the fact.<sup>69</sup>

68 George Liveing to Osmond Fisher, 2 February 1873, CUL (Add MS 7652/V R/16). The need to secure the good opinion of outsiders was also an important aspect of the 1888 competition for the Oxford chair of geology. Joseph Lucas, ex-Survey officer and hydrogeologist, sought prominent politicians, professors and society figures as well as geologists to support his candidature. The blessing of the previous incumbent, Joseph Prestwich, was particularly prized by the candidates. Lucas's testimonials stressed the value of practical ability alongside published works, two aspects which attracted discussion in the Cambridge competition (J. Lucas, *Testimonials*, British Library, London, 1888). Many thanks to Hugh Torrens for passing on this information.

69 Henry Woodward to Thomas McKenny Hughes, 29 January 1873, CUL (Add MS 9557/2 G/5). Original emphasis.

Fisher received a similar rebuff from Professor T. Rupert Jones, Professor of Geology at the Royal Military College, Sandhurst, and recently elected Fellow of the Royal Society, who was waiting to hear more of the intentions of John Morris, another potential candidate.<sup>70</sup> Such correspondence helped to clarify the field of combat by stimulating geological authorities to decide upon their allegiances and by forcing potential candidates to choose whether or not to stand for the chair in the light of the emerging competition.

Some authorities, such as Joseph Prestwich (1812–96), were free with their testimonials and supplied these to more than one candidate. Prestwich was a Fellow of the Royal Society, a past President of the Geological Society and an expert on Tertiary and drift deposits. He had retired from his full-time business as a wine merchant the previous year. By the time he received Hughes's request for a testimonial, Prestwich had already supplied Fisher and Dawkins with the necessary letters. He admitted that he had been partly motivated by friendship, observing that he would have restricted himself further, 'if I thought there were only one fitting candidate & the applications were not from personal friends'.<sup>71</sup> Others were more exclusive in their support. Dawkins, who was early in the field, managed to secure a testimonial from John Phillips, Fellow of the Royal Society, past President of the Geological Society and Professor of Geology at Oxford, where Dawkins had taken his undergraduate degree. Phillips later declined, though in gracious terms, to give one to Hughes.<sup>72</sup> On the other hand Charles Lyell, another Fellow of the Royal Society, past President of the Geological Society and a most eminent geologist, devoted his attentions to Hughes. When approached by Dawkins and Brodie, he refused to provide either with a testimonial, although he considered Brodie to be 'a good man'.<sup>73</sup> We shall return later to the efforts made by Charles Lyell and his wife Mary on behalf of Hughes's candidature.

The senior staff of the Geological Survey comprised another fertile source of testimonials. Requests appeared under a number of guises: some candidates wrote as employees, some were personal friends, others wrote as one respectable geologist to another. When the boundaries between these areas became blurred, Survey staff could find it difficult to reconcile their loyalties. Henry Bristow, Senior Director of the Survey, was a good friend of Fisher and at first determined to support only him.<sup>74</sup> However, he later informed Fisher, 'I have given Hughes a handsome Testimonial which I could not honestly avoid doing, as he really is entitled to it both officially & as a long known friend of 12 years standing.'<sup>75</sup> A. C. Ramsay, the newly appointed Director General of the Survey, Fellow of the Royal Society, Professor of Geology the Royal School of Mines, past President of the Geological Society, and currently vice-president of the

70 Woodward, *op. cit.* (6), 200; T. Rupert Jones to Osmond Fisher, 31 January 1873, CUL (Add MS 7652/V R/15).

71 Joseph Prestwich to Thomas McKenny Hughes, 2 February 1873, CUL (Add MS 9557/2 G/19).

72 Thomas McKenny Hughes to William Thompson, 4 February 1873, CUL (Add MS 9557/2 G/31).

73 Mary Lyell to Thomas McKenny Hughes, 4 February 1873, CUL (Add MS 9557/2 G/28); Lyell to Hughes, *op. cit.* (64).

74 Bristow to Fisher, *op. cit.* (58).

75 Bristow to Fisher, *op. cit.* (60).

same, also received a number of requests. As might have been expected, he supplied both Survey men, Hughes and Green, with testimonials.<sup>76</sup> However, he declined to provide Fisher with one, excusing himself with the statement that ‘too many testimonials from the same hand weakens every one of them, and before receiving your note I had previously promised testimonials to two of our own people both Cambridge men, viz. Mr Hughes and Mr Green’.<sup>77</sup> Ramsay and other authorities on the Survey could speak with more assurance about the qualities of candidates with Survey connections than those without. However, the geological expertise gained by Hughes and Green on the Survey might also have been held in higher regard than the kind of geological research carried out by other candidates, an aspect which will be explored later in the paper.

Networks of support gradually emerged during these first few uncertain days. In the process, the veil of everyday dissimulation and diplomacy was occasionally lifted a fraction to reveal private opinions about geological competence and friendship. We return from these broad geological horizons to Cambridge, where the candidates, now armed with testimonials, were making themselves known to the electors. Fisher, and certainly Bonney and Morris, were well known here. But for those less familiar to the electors, canvassing amongst the Cambridge colleges was a particularly crucial part of the competition.

### **Canvassing in Cambridge: powerful peers and college factions**

Hughes and Bonney soon drew ahead of their comrades and became the main competitors for the chair. Hughes’s supporters marked Bonney, who had long resided in Cambridge, as a very dangerous rival.<sup>78</sup> A few days into the competition, Mary Lyell confessed to Hughes, ‘I fear with you that Bonney will succeed, still we must not give up hopes.’<sup>79</sup> On 11 February the *Pall Mall Gazette* set out the case for each side in this prescient announcement:

It seems probable that the contest will lie between Mr Bonney, who has the advantage of being a resident and has been lecturing on geology for the last four years in his own college, and Mr Hughes, who besides an experience of more than twelve years on the Geological Survey, is recommended by the distinctly expressed preference of Professor Sedgwick.<sup>80</sup>

Bonney had been Lecturer in Geology at St John’s College since 1869 and, as he emphasized in his declaration to the electors, students from other colleges also attended his lectures.<sup>81</sup> His geological ascent in Cambridge had coincided with Sedgwick’s decline in health, and it has been observed that his efforts kept the traditions of the Cambridge school of geology alive during this difficult period. However, Bonney had

<sup>76</sup> CUL (CUR, 39.17.2,126, 131).

<sup>77</sup> Andrew Ramsay to Osmond Fisher, 29 January 1873, CUL (Add MS 7652/V R/22).

<sup>78</sup> David Forbes to Thomas McKenny Hughes, 31 January 1873, CUL (Add MS 9557/2 G/13).

<sup>79</sup> Lyell to Hughes, op. cit. (73).

<sup>80</sup> Anon, op. cit. (27).

<sup>81</sup> CUL, op. cit. (20); H. Woodward, ‘Eminent living geologists: the Rev. Professor T. G. Bonney, D.Sc., LL.D., F.R.S., F.G.S., F.S.A.’, *Geological Magazine* (1901), Decade IV, VIII, 385–400.



not published widely, perhaps partly because of his teaching burden, so he was not particularly well known amongst the geological fraternity.<sup>82</sup> In addition, as we shall see in the next section, it was rumoured that Bonney's particular field of geological research was not held in much esteem.

Although Hughes was not on the spot in Cambridge, he did have some advantages. As the *Pall Mall Gazette* reported, he was known to be the choice of the late Professor Sedgwick; he also had the backing of the Sedgwick family after Sedgwick's death and the weighty patronage of Sir Charles Lyell. Finally, he had the support of the Survey, of which more later. However, as Sedgwick himself had noted less than a year before his death, one of the most important disadvantages under which Hughes might labour, should he choose to succeed him in the chair, was that he was not in Cambridge very often and was therefore not personally known to many of the electors.<sup>83</sup> Mary Lyell, who emerged as Hughes's campaign manager, attempted to address this situation in her strategic canvassing of electors.

### The Lyells' campaign for Hughes

From the start of the competition, Hughes had been assailed with advice to secure the influence of Sir Charles Lyell.<sup>84</sup> Lyell has appeared earlier in this paper as a favourite target for testimonial hunters. His eminently respectable name was considered likely to attract the attention of the electors. He had won early renown with his *Principles of Geology*, and his theories had been keenly discussed at the Geological Society in the past.<sup>85</sup> Though now aged seventy-five, Lyell was still geologizing in Britain and abroad and he continued to publish; the fourth edition of his *Antiquity of Man* would appear soon after the conclusion of the Woodwardian competition.<sup>86</sup> Mary Lyell, daughter of the geologist Leonard Horner, often accompanied Lyell on tours and assisted him with publications.<sup>87</sup> Hughes, a friend of both Charles and Mary Lyell, had joined them on some of their recent trips.<sup>88</sup>

There was little need for concern on the part of Hughes's advisors. The Lyells had evidently favoured Hughes as Sedgwick's successor for some years before the chair became vacant and Mary Lyell had been ensuring that Sedgwick knew of her husband's

82 Woodward, op. cit. (81), 387–8; Rastall, op. cit. (22), 49.

83 Margaret Isabella Sedgwick to Mary Lyell, 22 March 1872, CUL (Add MS 9557/12 C/6, ii).

84 Henry Day to Thomas McKenny Hughes, 30 January 1873, CUL (Add MS 9557/2 G/8); Searles V. Wood Jr to Thomas McKenny Hughes, 31 January 1873, CUL (Add MS 9557/2 G/17).

85 C. Lyell, *Principles of Geology, Being an Attempt to Explain the Former Changes of the Earth's Surface, by Reference to Causes Now in Operation*, 3 vols., London, 1830–3; J. C. Thackray, 'Charles Lyell and the Geological Society', in *Lyell: The Past is the Key to the Present* (ed. D. J. Blundell and A. C. Scott), London, 1998, 17–20.

86 C. Lyell, *The Geological Evidences of the Antiquity of Man*, 4th edn, London, 1873; T. G. Bonney, *Charles Lyell and Modern Geology*, London, 1895, 195–200.

87 J. Evans, Obituary of Charles Lyell, *Quarterly Journal of the Geological Society of London* (1876), 32, 53–69.

88 Charles Lyell to Robert Harkness, 17 May 1872, CUL (Add MS 7652/IV C/10); Lyell, op. cit. (86), p. vii; Bonney, op. cit. (86), 200.

admiration for Hughes as he drew nearer retirement. In 1872 she received the following intelligence from Sedgwick's niece, Margaret Isabella:

I took what I thought a good opportunity to read to him the greater part of the letters which you wrote to me last autumn with Sir Charles' opinion of Mr Hughes. Uncle was extremely glad to hear it. He said how glad he should be to think that he should have such a succession – then he wondered if any of the electors would think of his present deputy Prof. Morris – I do not think now that my uncle will resign *this* year. I am afraid I cannot be of any more use, can I?<sup>89</sup>

Once the situation became vacant, Mary Lyell contacted all those who might further Hughes's interests, spreading the news of Lyell's support for Hughes amongst the colleges of Cambridge and down any route that might gain the attention of the electors. A reply to a letter from Hughes suggests the immensity of her task: 'received yours with the Electoral Roll. How few we know. I think I shall put Sir Charles to write to the Master of Sidney, & [?] to the Master of Magdalene'.<sup>90</sup> Mary Lyell's own burden of recipients included the Rev. Charles Kingsley (1819–75), the former Professor of Modern History at Cambridge who turned out to be a supporter of Dawkins, and T. H. Huxley.<sup>91</sup> She was also keen to win over Henry Sidgwick, Lecturer in Moral Sciences, who had considerable influence in Trinity College.<sup>92</sup>

Hughes's name and qualifications must soon have become well known to the electors, and this was due in large part to the efforts of the Lyells. However, two other important Cambridge influences on Hughes's candidature also feature strongly in the Woodwardian correspondence and must be addressed before concluding this section. First, the reaction in Trinity College, where Adam Sedgwick had spent his life and Hughes his undergraduate years, and, second, the posthumous support of Sedgwick himself.

### Trinity College, Adam Sedgwick and the unpredictability of electors

Trinity College was large, powerful and host to a sizeable proportion of electors. The other Cambridge college of similar size and standing was St John's. The long-standing rivalry between these two neighbouring colleges was now mirrored in their respective support for the candidature of Hughes and Bonney. Ingleby, an advocate of Hughes, confided to Luard that Bonney could count on assistance from the electors of St John's: 'Bonney will have a strong backing, because he is an agreeable fellow, & very popular in his college.'<sup>93</sup> However, the casting of the large quantity of Trinity votes in favour of Hughes was not guaranteed; some feared that the Trinity electors might become touchy if approached in the wrong way.

<sup>89</sup> Sedgwick to Lyell, op. cit. (53). Original emphasis.

<sup>90</sup> Mary Lyell to Thomas McKenny Hughes, 4 February 1873, CUL (Add MS 9557/2 G/29, i).

<sup>91</sup> Charles Kingsley to Mary Lyell, 3 February 1873, CUL (Add MS 9557/2 G/29, iii); Lyell to Hughes, op. cit. (90).

<sup>92</sup> Anne Jemima Clough to Mary Lyell, 31 January 1873, CUL (Add MS 9557/2 G/29, ii).

<sup>93</sup> Clement Ingleby to Henry Luard, 1 February 1873, CUL (CUR, 39.17.2, 121).

Hughes had received early encouragement from the Master of Trinity, William Hepworth Thompson (1810–86), who was clearly worried about how best to muster the support of Trinity electors without antagonizing them: ‘if I call the Fellows together or even address them by letter they would think it a kind of dictation’.<sup>94</sup> Ingleby, after consultation on the matter with Luard, decided (like Mary Lyell) to invoke the support of Henry Sidgwick, ‘who is a power among the Fellows of Trinity. I have asked him to adopt Hughes as the Trinity Candidate’.<sup>95</sup> Ingleby was practised in Cambridge politics and had recently been attempting to shake up the Moral Sciences Tripos.<sup>96</sup>

Attempts to reach electors through the pages of leading journals, such as the *Athenaeum*, the *Academy* or *Nature*, inspired similar concerns. Ingleby asked Luard, ‘How are these ignoramuses of electors to be enlightened. I am *disposed* to put a paragraph in the *Athenaeum*: but one is so fearful of doing a candidate harm.’<sup>97</sup> Luard replied, ‘it must be carefully done so as not to seem to dictate to the electors. Otherwise they get their backs put up, & it goes against the candidate it supports’.<sup>98</sup> A letter from a Cambridge correspondent did appear in the *Pall Mall Gazette* on 11 February (see above), painting Hughes in rosier colours than Bonney and publicizing Sedgwick’s own posthumous support for Hughes.<sup>99</sup>

In the past, Sedgwick had hinted to the Master of Trinity that he would like Hughes to succeed him as Woodwardian Professor.<sup>100</sup> After his death, Sedgwick’s niece, Mary J. Sedgwick, wrote to Hughes, ‘We are all hoping so *very very* much that you will be chosen Professor in our dear Uncle’s place. I wish with all my heart we could be of any use to you but I fear that is impossible.’<sup>101</sup> Hughes’s contemporaries were divided about how far the Sedgwick stamp of approval would influence the electors, and this subject was of considerable interest in the Geological Survey offices in London. Liveing informed Fisher,

I saw Bristow on Friday & he told me that Hughes had some letter from Miss Sedgwick expressing Sedgwick’s favourable opinion of him. I don’t know how much it amounts to. I know that Sedgwick had spoken highly of him but I feel sure that he would not say anything to prejudice the choice of his successor, nevertheless it may be construed as a wish that he should have the chair.<sup>102</sup>

94 William Thompson to Thomas McKenny Hughes, 3 February 1873, CUL (Add MS 9557/2 G/24); William Thompson to Henry Luard, 3 February 1873, CUL (CUR, 39.17.2, 127).

95 Clement Ingleby to William Whitaker, written on the reverse of the letter from Luard to Ingleby, op. cit. (63).

96 J. R. Gibbins, ‘Constructing knowledge in mid-Victorian Cambridge: the Moral Sciences Tripos 1850–70’, in *Teaching and Learning in Nineteenth-Century Cambridge* (ed. J. Smith and C. Stray), Woodbridge, 2001, 61–88.

97 Clement Ingleby to Henry Luard, 3 February 1873, CUL (CUR, 39.17.2, 125). Original emphasis.

98 Luard to Ingleby, op. cit. (63).

99 Anon., op. cit. (27).

100 Thompson to Luard, op. cit. (94).

101 Mary J. Sedgwick to Thomas McKenny Hughes, 7 February 1873, CUL (Add MS 9557/1 S/12). Original emphasis.

102 Liveing to Fisher, op. cit. (68).

It was difficult to predict the outcome of the competition, and there was no sure route to victory. Bonney was on the spot, but Hughes came armed with powerful advocates. The electors were bombarded with testimonials by the candidates, and their supporters tackled them in person, by letter and through intermediaries. In Hughes's case, some of his supporters infused his claims with geological authority from afar, whilst others approached the Cambridge electors on their own ground to publicize his cause. Electors might even read about the relative merits of candidates in the papers. However, before returning to Cambridge on 20 February when the electors finally cast their votes, one more influence on the outcome of the competition must be discussed. This requires a final visit to the Geological Survey.

### Opinions in the Survey

The Geological Survey nurtured strong opinions about the merits of the candidates, and some of these had been offered to the electors in public testimonials. This final section looks at the more candid estimations which were expressed privately and sees how Survey gossip was employed by Cambridge-based supporters in the tactical promotion of protégés.

Opinions about the Woodwardian competition within the Survey tended to focus on the geological competence of the candidates. When Sedgwick won the chair in 1818 he was quite happy to declare, in the gentlemanly atmosphere of the time, that he had no knowledge of geology.<sup>103</sup> However, previous experience and statements of geological competence featured prominently in the testimonials of his would-be successors, who demonstrated a range of expertise. Some had been acquired in geological employment, others in spare time whilst employed by the church. There was no strict division between the two; Bonney's case demonstrates that even those working in geology were often dependent on spare time for their research. Contemporary views about the geological competence of the candidates were informed by disparate institutional, intellectual and social backgrounds and were, in consequence, very varied. But a high proportion of responses from Survey employees were coloured by the ethos of fieldwork.

Fieldwork was spoken of with pride on the Survey and was considered an essential part of any geological lecture course. Sedgwick himself had been a respected field geologist as well as an inspiring lecturer. Surveying was not just an important part of geological research; it had become a romantic ideal during the nineteenth century, described by Roy Porter as a cult, an obsession. Although Survey employees were paid, their outdoor pursuits were still perceived as respectable, gentlemanly ones, where appointment was largely achieved through patronage and employees were gentlemen.<sup>104</sup> 'Gentlemanly' status was a matter of public presentation in society as much as

<sup>103</sup> Porter, *op. cit.* (6), 819; Becher, *op. cit.* (6), 63. Thomas Webster, who won the University College chair in 1841, regarded himself as a professional lecturer, and his lecturing skills had a prominent place alongside his geological work in his testimonials from William Buckland and Leonard Horner. Webster also made the most of support from two professors within the same institution. See Challinor, *op. cit.* (14), 148–50.

<sup>104</sup> Porter, *op. cit.* (6), 819–21, 825–8.

family background or financial independence, and drew upon manners, interests, contacts, culture and subtle social nuances. When Hughes first applied to the Survey for the post of assistant geologist he had been helped by Sedgwick before being invited to join the staff by Murchison in 1861.<sup>105</sup> Senior Survey staff now offered their patronage to candidates for the Cambridge chair.

Hughes won a splendid testimonial from Ramsay, the director general, who stated with authority, 'I consider you to be a first rate field Geologist.'<sup>106</sup> Green was also regarded as a good geologist: well liked, well seasoned with field experience. He also secured a testimonial from Ramsay. However, Ramsay evidently favoured Hughes over Green, and Green was also encumbered with some disreputable affair from his past.<sup>107</sup> Of the three candidates with Survey connections, Dawkins was held in the lowest regard by his erstwhile colleagues. He had left the institution tarred as a poor geologist. There could be worse things than the withholding of patronage when such a reputation travelled outside the Survey.

Dawkins was well known by the time of the election as a Fellow of the Royal Society who held a good lectureship in geology at Owen's College, Manchester. However, his bad reputation on the Survey damaged his chances in the competition. Searles V. Wood Jr (1830–84) confided to Hughes that when Dawkins had been assigned part of the eastern counties to survey, he had made selective use of Wood's own, privately produced, map and had made up much of the rest, adding, 'I was not surprised to find that his work was all put aside at Jermyn Street & fresh Geologists put on to do it all over again.'<sup>108</sup> Dawkins's consultancy work in industrial geology, which tended to be regarded as a rather shabby sector of geological research, might also have diminished his standing. Dawkins withdrew his candidature on 15 February. By this time, Hughes and Bonney were galloping ahead.<sup>109</sup>

### **How was this information travelling to Cambridge?**

Information was travelling from geologists to Cambridge electors in private letters as well as public testimonials and these could take complicated routes. The Whitaker–Ingleby–Luard chain supplied one such line of private communication. William Whitaker, Survey geologist, kept Hughes's supporter, Ingleby, in touch with Survey opinion and seems to have recommended Hughes to Ingleby as the Survey's candidate of choice.<sup>110</sup> Ingleby, in turn, was transmitting this information to Luard, another powerful voice in Cambridge, and he was not averse to sharing negative Survey information about Hughes's rivals Dawkins and Bonney.

105 Thomas McKenny Hughes to Adam Sedgwick, 25 March 1861, CUL (Add MS 7652/II O/62); Woodward, *op. cit.* (19), 2.

106 Andrew Ramsay to Thomas McKenny Hughes, 29 January 1873, CUL (Add MS 9557/2 G/4).

107 Ingleby to Luard, *op. cit.* (97); Andrew Ramsay to Thomas McKenny Hughes, 12 February 1873, CUL (Add MS 9557/2 G/39).

108 Searles V. Wood Jr to Thomas McKenny Hughes, 3 February 1873, CUL (Add MS 9557/2 G/26).

109 Tweedale, *op. cit.* (11), 437–8; CUL (CUR, 39.17.2, 138).

110 Richard Tiddeman to Thomas McKenny Hughes, 2 February 1873, CUL (Add MS 9557/2 G/20, i).

Ingleby described Hughes as the 'eldest son of the Bishop of St Asaph: a thorough gentleman, to boot' who 'has been *twelve* years of the Geological Survey of the U.K. & one of the most distinguished men on it'.<sup>111</sup> Dawkins received less favourable treatment. In a letter headed, 'As this letter's rather slanderous you'd do well for me to burn it', Ingleby suggested to Luard that Dawkins had spent his Survey time seeking preferment for himself: 'So he *got* made F.R.S., & a good lectureship at Manchester. He's an impudent brute, & has been known to boast that he shall certainly succeed Sedgwick. That's W. Boyd Dawkins FRS & I hope & thank there's no fear of yr. having him.'<sup>112</sup>

### Bonney and the Survey

Bonney's name was much discussed in the Survey as one of the front runners for the chair. Bonney had written to Whitaker on the day of Sedgwick's death, informing him of the sad occasion and adding, 'I shall probably offer myself as a candidate, with what success time will shew.'<sup>113</sup> News was soon circulating in the Survey that Bonney had the promise of over a hundred votes, a rumour that seems to have started with Hughes.<sup>114</sup> Whitaker appears to have drawn some unflattering portraits of Bonney in his communications with Ingleby, who in turn confided to Luard that although Bonney could be sure of strong support from his own college, 'he is not a *field or practical* geologist'. Ingleby added that Bonney 'w<sup>d</sup> be a most unfortunate professor, for he would be laughed at (& his electors, of course,) by all competent geologists. I wish you would impress on your friends at Cambridge, that *no man is fit to hold a geological professorship who has not done the practical work of the survey*'.<sup>115</sup>

There are two issues of importance here: the lack of fieldwork, but also the lack of support in the Survey and amongst fieldworking geologists for the kind of geological research practised by Bonney. Bonney was publishing very little at this time and his output was perhaps restricted by the demands of his college teaching post.<sup>116</sup> However, he was known for a recent interest in petrological research (although he had also worked on the Alpine strata). Petrology and mathematical geology were becoming more frequently studied, and reflect a growing specialization in the discipline.<sup>117</sup> Although petrology was well regarded in Germany and France, it was not rated highly by Survey fieldworkers of the old school (Bonney did, however, manage to gain a reference from the Survey palaeontologist Robert Etheridge).<sup>118</sup> A few years after the competition, when Archibald Geikie was engaged with his microscope one evening,

111 Ingleby to Luard, op. cit. (93). Original emphasis.

112 Clement Ingleby to Henry Luard, 4 February 1873, CUL (CUR, 39.17.2, 130). Original emphasis.

113 T. G. Bonney to William Whitaker, 27 January 1873, CUL (Add MS 9557/2 G/20, ii).

114 Bristow to Fisher, op. cit. (60); Liveing to Fisher, op. cit. (68).

115 Ingleby to Luard, op. cit. (93). Original emphases.

116 Woodward, op. cit. (81), 388.

117 See Porter, op. cit. (6), 830. On the rise of petrological research see F. W. Rudler, 'Fifty years' progress in British geology', *Proceedings of the Geologists' Association* (1887–8), 10, 234–72.

118 CUL, op. cit. (20). Bonney did carry out some fieldwork; the map and sections he made at Glen Logan in 1879, for example, contributed to the Highlands controversy, but he was not seen as a sound fieldworker. See D. R. Oldroyd, *The Highlands Controversy*, Chicago, 1990, 180–6.

Ramsay remarked impatiently, 'I cannot see of what use these slides can be to a field-man. I don't believe in looking at a mountain with a microscope.'<sup>119</sup> Bonney seems to have been aware of Survey disdain for those they perceived as non-fieldworkers. Much later, when President of the Geological Society, he cautioned,

The establishment of a Geological Survey as a department of the State is an immense boon to a country; but there is always some danger lest the systematic method of their work, and a natural, I may say laudable, *esprit de corps* should lead its members to regard workers unconnected with them as intruders, and to speak with some contempt of 'amateurs'. Personally I should not admit that a man who has devoted his life to the study and teaching of geology is not as fully entitled to be called a Professional Geologist as one who is an officer of a Survey.<sup>120</sup>

Fisher also had difficulties in securing testimonials, some of which have already been described. He won a reference from his good friend on the Survey, Henry Bristow (who mentioned his fieldwork), but his research on mathematical aspects of geology, often regarded as a sideline subject, might have exerted a negative influence on other geologists, and Fisher was not prominent in learned societies.<sup>121</sup> However, geological expertise and lecturing abilities dominated discussion; the fact that he, like Bonney, was a clerical scientist was not mentioned in any of the letters recovered. Ingleby appears to identify the most likely reason for Fisher's poor running when he confided to Luard that 'O. Fisher is, beyond question, a good geologist ... but he is an extremely bad lecturer; & is therefore unfit for the chair'.<sup>122</sup>

In this range of Survey opinion Hughes was favoured above the other candidates. Hughes was a gentleman and a fieldworker, a true son of the Survey. Dawkins was regarded as a poor or lazy fieldworker who was currently dabbling in the shabby world of industrial geology. Bonney, a petrologist rather than a fieldworker, was emerging as Hughes's main rival. All of this information was diligently transmitted to Cambridge. Although this analysis is based on only a fragment of contemporary opinion, the tone of these letters suggests that the estimations of the Survey, the largest geological employer of the time, would be taken seriously by many electors, who would not (as Ingleby threatened) want to be laughed at for making the wrong decision.

## Results

At one o'clock in the afternoon on Thursday 20 February 1873, the electors began to cast their votes. At half past two the Vice-Chancellor announced the result: Hughes obtained 112 votes, Bonney 105, Fisher four and Morris one. Fisher might well have received a larger proportion of the votes had he not retired within the first half-hour of the voting.<sup>123</sup>

119 A. Geikie, *Memoir of Sir Andrew Crombie Ramsay*, London, 1895, 343. Many thanks to David Oldroyd for drawing my attention to this comment, and for his observations about petrology.

120 T. G. Bonney, 'Anniversary Address of the President', *Quarterly Journal of the Geological Society of London* (1885), 41, 37–96.

121 Henry Bristow to Osmond Fisher, 30 January 1873, CUL (Add MS 7652/V R/4).

122 Ingleby to Luard, op. cit. (93).

123 CUL (CUR, 39.17.2, 140, 2); Anon., op. cit. (66).

Osmond Fisher's father, the Ven. John Fisher, wrote to his son after the election: 'The contest was evidently between the two colleges – with very little special reference to the merits of the candidates.'<sup>124</sup> One reason why Hughes and Bonney drew ahead as the main contenders and received such a large proportion of the votes was certainly linked to college politics. St John's and Trinity were very large and therefore held a high proportion of the voters. Despite earlier concerns about unpredictable electors, most cast their final votes in favour of the college candidate. Hughes received 39 votes from Trinity and only one from St John's; Bonney gained 44 votes from St John's and 10 from Trinity.

Hughes received warm congratulations from Survey colleagues.<sup>125</sup> John George Goodchild (1844–1906), Hughes's junior colleague in the area of north England which they had been surveying, wrote, 'Everyone here seems to be pleased at the news of your appointment in to-day's papers.' In light of Murchison's dictate of 1867 it is interesting to see that he added, 'We are most pleased because you will now be to a great extent free to write what you please without having to keep to instructions or to be careful that you don't publish any statements that go against the published views of narrow minded superiors.'<sup>126</sup>

## Conclusions

Consider the fates of the candidates for the professorship. Thomas McKenny Hughes held the Woodwardian Chair for the next forty-four years. Mary Lyell did not live long to see Hughes enjoy his new post, for she died on 24 April 1873. The following year saw Charles Lyell priming Hughes for election to the Royal Society and the Athenaeum, although he did not live to see the fruit of his efforts.<sup>127</sup> In the course of his professorial career, Hughes became respected for his contribution to the Cambridge school of geology, perhaps more so than for his geological research.<sup>128</sup> His obituary in *The Times* describes how Hughes devoted himself to three tasks. First, the defence of Sedgwick's version of the Cambrian system in opposition to Murchison's views. Second, the publication of *The Life and Letters of the Reverend Adam Sedgwick*, which was eventually completed with assistance. Third, the opening of the Sedgwick Museum in 1904 where Woodward's original collection was displayed alongside many new specimens. The professorship next became vacant on Hughes's death on 9 June 1917. The new professor, John Edward Marr, had been one of Bonney's geological pupils at St John's College.<sup>129</sup>

124 Joshua Fisher to Osmond Fisher, 23 February 1873, CUL (Add MS 7652/V R/19).

125 W. Talbot Aveline to Thomas McKenny Hughes, 20 February 1873, CUL (Add MS 9557/1 A/26); Henry Bristow to Thomas McKenny Hughes, 25 February 1873, CUL (Add MS 9557/1 B/24).

126 John Goodchild to Thomas McKenny Hughes, 21 February 1873, CUL (Add MS 9557/1 G/8).

127 Charles Lyell to Thomas McKenny Hughes, 7 March 1874, SMC (Hughes Papers).

128 G. W. Lamplugh, Obituary of T. McKenny Hughes, *Quarterly Journal of the Geological Society of London* (1919), 74, pp. lii–liv; for an account of the restrictions facing academic geologists in the late nineteenth and early twentieth centuries see Porter, op. cit. (2).

129 Anon., 'Obituary. Professor McKenny Hughes of Cambridge', *The Times* (1917), 11 June 1917, 10; T. M. Hughes, 'Biographical notice of Adam Sedgwick', *Yorkshire Geological and Polytechnic Society*



The Rev. Thomas George Bonney succeeded Professor John Morris in the Chair of Geology at University College in 1877. Bonney continued to work at St John's College for some time, inspiring future generations of geologists. On retiring from University College he moved back to Cambridge. In autumn 1905 Hughes provided him with a room at the Sedgwick Museum, where he taught as an informal demonstrator. Whilst Hughes wrote his account on Sedgwick's life and work, it was Bonney who worked up a book on Lyell's contribution to modern geology.<sup>130</sup>

Alexander Henry Green left the Survey only a year after Hughes, having been elected to the Chair of Geology at Leeds in 1874. He seems to have been assisted by the patronage of Archibald Geikie, Director of the Survey of Scotland.<sup>131</sup> In 1888 Green succeeded Joseph Prestwich as Professor of Geology at Oxford. Sadly, his teaching burden left the disillusioned Green very little time to carry out original research.<sup>132</sup> William Boyd Dawkins became Professor of Geology at Owen's College, Manchester in 1874. He stood, unsuccessfully, for the Chair of Geology at Oxford in 1874 (the post was offered to and accepted by Prestwich). Dawkins became increasingly involved with economic geology. He advised on Channel tunnel schemes in the 1880s and helped to discover the Kent Coalfield.<sup>133</sup> Dawkins was knighted in 1919. The Rev. Osmond Fisher continued his mathematical researches into geological subjects and in 1881 published *Physics of the Earth's Crust*.<sup>134</sup>

Professor John Morris received the first award of the Lyell Medal and Fund from the Geological Society of London in 1876. He did not remain long in academic life and retired from the Chair of Geology at University College London in 1877. Professor Peter Martin Duncan continued as Professor of Geology and Palaeontology at King's College London. He worked on fossil echinoids and corals up to his death. The Rev. Peter Bellinger Brodie remained at his living in Warwickshire and continued to build a geological reputation among local and national learned societies. Professor William King continued in his professorial duties at Queen's College, Galway. He was appointed to the chair in natural history, geology and mineralogy in 1882, but only enjoyed this post for a year, resigning in 1883 after a stroke.<sup>135</sup>

The outcome of the competition depended on a variety of influences. Some have been reconstructed from the correspondence generated in the preceding twenty-five days. Patronage was evidently as important as geological competence in acquiring votes, while candidates and their supporters devoted their attention to securing the favourable

(1883), 255–69; J. W. Clark and T. M. Hughes, *The Life and Letters of the Reverend Adam Sedgwick*, 2 vols., Cambridge, 1890; CUL (CUR, 39.17.2, 235); Porter, op. cit. (2), 203.

130 T. G. Bonney, *Memories of a Long Life*, Cambridge, 1921, 42–4; Porter, op. cit. (2), 203; Rastall, op. cit. (22), 49; J. E. Marr and R. H. Rastall, Obituary of T.G. Bonney, *Quarterly Journal of the Geological Society of London* (1924), 80, pp. xlviii–li; Bonney, op. cit. (86).

131 A. Geikie, *A Long Life's Work: An Autobiography*, London, 1924, 219.

132 H. Woodward, 'Obituary. Alexander Henry Green, M.A., F.R.S., F.G.S.', *Geological Magazine* (1896), Decade IV, III, 480; Porter, op. cit. (6), 834.

133 J. W. Jackson, 'Sir William Boyd Dawkins (1837–1929), a biographical sketch', *Cave Science* (1966), 5, 397–412; Tweedale, op. cit. (11).

134 O. Fisher, *Physics of the Earth's Crust*, London, 1881.

135 Harper, op. cit. (31).

opinion of Cambridge colleges and geological peers. However, even the two main candidates remained uncertain of their standing in the eyes of the electors until the results were announced. It was evidently difficult to gauge the reactions of the Cambridge electors. The backing of large and powerful colleges gave Bonney and Hughes a great advantage, and the competition was made more piquant by the rivalry between John's and Trinity. Bonney's fame in Cambridge also played in his favour. However, Hughes won many votes through Charles Lyell's name, Mary Lyell's campaigns and Sedgwick's posthumous support. His cause was probably also promoted by negative Survey gossip about Bonney and Dawkins.

The Woodwardian correspondence was partly directed towards the Cambridge-based electors but it also reached out into a broader hinterland. Once the candidates started to seek out testimonials, geological authorities had to decide whom they thought most worthy of support. Professional opinion vied with personal friendship, and the reaction in geological spheres revealed some varied perceptions about the qualities of a competent geologist. We have seen the strong opinions held by Survey officers and their bias towards the gentlemanly fieldworking geologist. When Bristow commiserated with Fisher on losing the election, he added, 'At all events there is some satisfaction in the knowledge that your opponent is a gentleman & well qualified withal for the duties that will devolve upon him – & I would much rather he prevailed over you than Bonney.'<sup>136</sup> Information was quietly and strategically transmitted down intricate webs of support and communication which flourished briefly during the course of the competition, such as the Whitaker–Ingleby–Luard chain.

On a broader scale, the range of backgrounds and fields of geological expertise of the candidates illustrate the varied make-up of geology at this time. The Survey was a power of influential opinion as well as an unwilling training ground for future university professors, but non-salaried geologists still held a respectable position despite the growing professionalization of geology. This warns against any simple distinctions between professionals and amateurs, or professionals and clergymen. Brodie, though a shadowy figure in surviving correspondence, was regarded by Lyell as a 'good man'; no comment was made on Bonney's clerical background or Fisher's church living.<sup>137</sup>

It is difficult to force the outspoken opinions of geological competence provoked by the Woodwardian competition into the framework and oppositions associated with nineteenth-century professionalization. Some fields of geological research were regarded as more respectable than others. Fieldwork had a high value in the Survey. Candidates might glow in the reflected glory of geological supporters. Even personal character was relevant to their success. This brief episode offers a vantage point from which to survey broader trends in nineteenth-century science. A comparison of the Cambridge case with other competitions offers an intriguing topic for further research. The immediate outcome of the Woodwardian competition was the appointment of a new professor, but the twenty-five days of discussion beforehand provoked a quiet clarification of perceptions about geology and geologists.

136 Henry Bristow to Osmond Fisher, 21 February 1873, CUL (Add MS 7652/V R/6).

137 Lyell to Hughes, *op. cit.* (64).